REMARKS

Claims 1-12, 14-19 and 21-24 are pending in this application. In the Office Action, the Examiner issued a final rejection of all of these claims under 35 U.S.C. §§103 and 112. More specifically, the claims were rejected under 35 U.S.C. §103 as being unpatentable over U.S. Patent 5,767,842 (Korth) in view of U.S. Patent 6,407,679 (Evan, et al.). The claims were further rejected under 35 U.S.C. §112 on the basis that the application does not provide the appropriate written description of the claims.

The Examiner, in the Office Action, also objected to the drawings as being informal, and indicated that formal drawings will be required when the application is allowed.

Applicants herein ask that the specification and independent Claims 1, 4, 8, 9, 10, 14, 17 and 21 be amended to address the rejection of the claims under 35 U.S.C. §112. The rejection of the claims under 35 U.S.C. §103 is respectfully traversed for the reasons presented below.

With respect to the rejection of the claims under 35 U.S.C. §112, the Examiner argued in the Office Action that the specification does not provide the appropriate written support for the description in the claims of the features that the typing gestures are "made in a touch-sensor free environment." Applicants are herein slightly rephrasing this language in the claims to indicate, more specifically, that the typing gestures are made "without touching any touch sensors." In order to provide an express support the this language in the claims, the specification is also being amended, on page 5, to indicate that the typing gestures shown in Figure 1 are made without touching any touch sensors.

This feature is clearly shown in Figure 1 of the application, and is readily understood by those of ordinary skill in the art from a review of that Figure and the discussion thereof on pages 4 and 5 of the application. Accordingly, this language that is being included in the specification

and claims is not new matter. Moreover, with these changes, the application now provides the appropriate written description of the claims subject matter.

These changes to the specification and claims are being made in response to the Examiner's request, in the Office Action, that the §112 matters be corrected. In addition, these changes do not raise any new issues and do not require any further searching by the Examiner. It is thus believed that entry of this Amendment is appropriate. The Examiner is, consequently, requested to enter this Amendment and to reconsider and to withdraw the rejection of Claims 1-12, 14-19 and 21-24 under 35 U.S.C. §112.

The rejection of the claims over the prior art is respectfully traversed because the prior art does not disclose or suggest a virtual typing procedure, as described in independent Claims 1, 4, 8, 9, 10, 14, 17 and 21, that uses a virtual and invisible keyboard, as described in these claims.

More specifically, Korth assumes that the user sees a virtual keyboard, either printed on a table or seen on a monitor. With the present invention, in contrast, the user does not see a virtual keyboard at all. The user may not even have a table in from of him. Because of this, in this invention, the typing processes are a set of gestures that imitate some typical typing movements but they are so vague that they require a statistical recognition process that interprets gestures, similar to the way a speech recognition machine interprets speech.

Also, because different uses have different ways of using gestures to represent their intentions, the system of this invention employs procedures to learn how their gestures correspond to those intentions. This is similar to the way in which a speech recognition system is trained. To elaborate, there is a great deal of variability in the representations of sounds made by different people. As a result, speech recognition systems are trained to understand how different people pronounce the same words and sounds. In addition, since there is such a large

variability in how people produce sounds, a typical method in speech recognition is to use a statistical processor that involves an acoustic statistical processor and language model filter to map sounds into words.

An important, non-obvious aspect of the present invention is to represent the recognition of gestures via a statistical machine that has two components – one is gesture features statistical component, and the other is a language model filter. A special case of a statistical gesture machine that is mentioned in the present patent application is an HMM.

In order to emphasize this aspect of the invention, independent Claims 1, 4, 8, 9, 10, 14, 17 and 21 describe the virtual keyboard, or the keyboard relative to which the gestures are made, as being invisible. This clearly distinguishes these claims from the prior art that uses a virtual but, in some form, visible keyboard. Specifically, Claim 1 indicates that the virtual keyboard is an invisible keyboard, and that each of the gesture classes is associated with one or more possible keys of the invisible keyboard. Claims 4, 8, 9, 10, 14 and 17, similarly, describe the feature that the captured or typing gestures are relative to an invisible keyboard, and that the gesture classes are associated with one or more possible keys of that invisible keyboard.

It is noted that, in the Office Action, the Examiner argued that Korth discloses a physically non-existent input device and that this corresponds to an invisible virtual keyboard. Applicants respectfully submit that a virtual keyboard is not the same as a virtual invisible keyboard. The virtual keyboard of Korth is clearly visible; this is plainly shown in Figure 1 of Korth. In the present invention, in contrast, the keyboard is not only virtual (there is no real keyboard), but it also is not visible (there is no image of any keyboard, and it cannot be seen). The keyboard exists only in the mind of the user. Further, it is the use of this invisible keyboard

that necessitates the above-discussed gesture analysis procedure that is needed in the operation of the present invention.

Accordingly, the invisible keyboard described in independent Claims 1, 4, 8, 9, 10, 14, 17 and 21 is not taught or suggested by Korth. The use of such a keyboard in the system of Korth suggested by the disclosure of Evans, et al.

In addition, there is an important difference between the system described in Evans, et al. and the present invention. Specifically, in the procedure of Evans, et al, words are determined on a sentence by sentence basis; while in the present invention, the words are determined on a word-by-word basis. Because of this difference, Evans, et al does not disclose or suggest, among other things, the specific gesture-to-key conversion procedure used in the present invention.

In light of the above-discussed differences between Claims 1, 4, 8, 9, 10, 14, 17 and 21 and the prior art, and because of the advantages associated with those differences, it cannot be said that any of these claims is obvious in view of the prior art. Thus, claims 1, 4, 8, 9, 19, 14, 17 and 21 patentably distinguish over the prior art and are allowable. Claims 2 and 3 are dependent from Claim 1 and are allowable therewith; Claims 5, 6 and 7 are dependent from, and are allowable with, Claim 4; and Claims 11, 12, 22 and 23 are dependent from Claim 10 and are allowable therewith. Similarly, Claims 15 and 16 are dependent from, and are allowable with, Claim 14; Claims 18 and 19 are dependent from Claim 17 and are allowable therewith; and Claim 22 is dependent from, and is allowable with, Claim 21.

In view of the above-discussion, the Examiner is asked to enter this Amendment, to reconsider and to withdraw the rejection of Claims 1-12, 14-19, 21-24 under 35 U.S.C. §§103 and 112, and to allow these claims.

The present application is now in condition for allowance, a notice of which is respectfully requested. If the Examiner believes that a telephone conference with Applicants' Attorneys would be advantageous to the disposition of this case, the Examiner is asked to telephone the undersigned.

Respectfully submitted,

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